



Joint Framework for

Measuring C2 Effectiveness | 23-26 January 2012 | JHU Applied Physics Lab, Laurel, MD



Keynote Speaker

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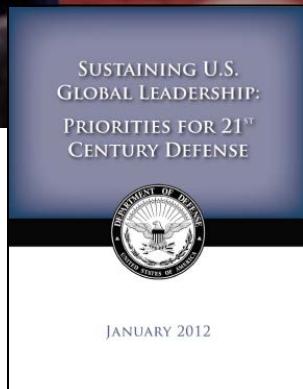
Improving IT Efficiency and Effectiveness in the Department of Defense

Carl D. Porter
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Department of Defense Chief Information Office



Setting Context...

POTUS: “DoD will be Agile”



*“Our military will be leaner, but the world must know the United States is going to maintain our military superiority with armed forces that are **agile**, flexible and ready for the full range of contingencies and threats.”*

President Obama

*“The U.S. joint force will be smaller, and it will be leaner. But its great strength will be that it will be **more agile**, more flexible, ready to deploy quickly, innovative, and **technologically advanced**. That is the force for the future.”*

Secretary Panetta



Current DoD IT Environment

		
<p>Hundreds of sub-optimal data centers and networks incur unnecessary costs</p>	<p>Limited interoperability reduces information sharing and collaboration on mission threats</p>	<p>Increasing user demand for new technology on rapidly evolving devices to support dynamic/hybrid operations</p>
		
<p>IT Programs average 81 Months* Cannot rapidly and efficiently field new technology to meet warfighter needs</p>	<p>Cybersecurity vulnerabilities threaten to exploit classified information and endanger our national security</p>	<p>Current IT delivery process hinders our ability to take advantage of new commercial technology</p>

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* Source: Defense Science Board



DoD CIO Approach Overview

- **Build the Joint Information Enterprise Architecture***
 - Produce milestones to drive implementation
 - Optimize information, network, and hardware
 - Optimize support software
 - Provide common applications
- **Pursue IT Reform -- Agile, Secure, Efficient and Effective DoD IT**
 - Enable Agile Capability Delivery
 - Partner and synchronize DoD CIO approach with related IT reforms in progress

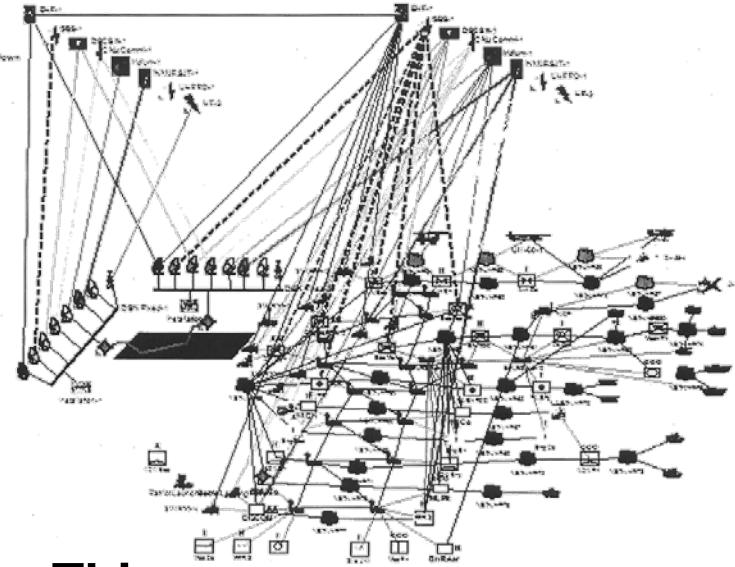
*Some details codified in the DoD IT Enterprise Strategy and Roadmap



Joint Information Enterprise (Stovepipes to Enterprise)

To This:

- Common
- Global
- Open
- Modular / "Composeable" / Agile
- Interoperable
- Homogeneous
- Standardized
- Secure



From This:

- Unique
- Local
- Proprietary
- Huge
- Inaccessible
- Disparate
- "Cylinders of Excellence"
- Security Vulnerabilities

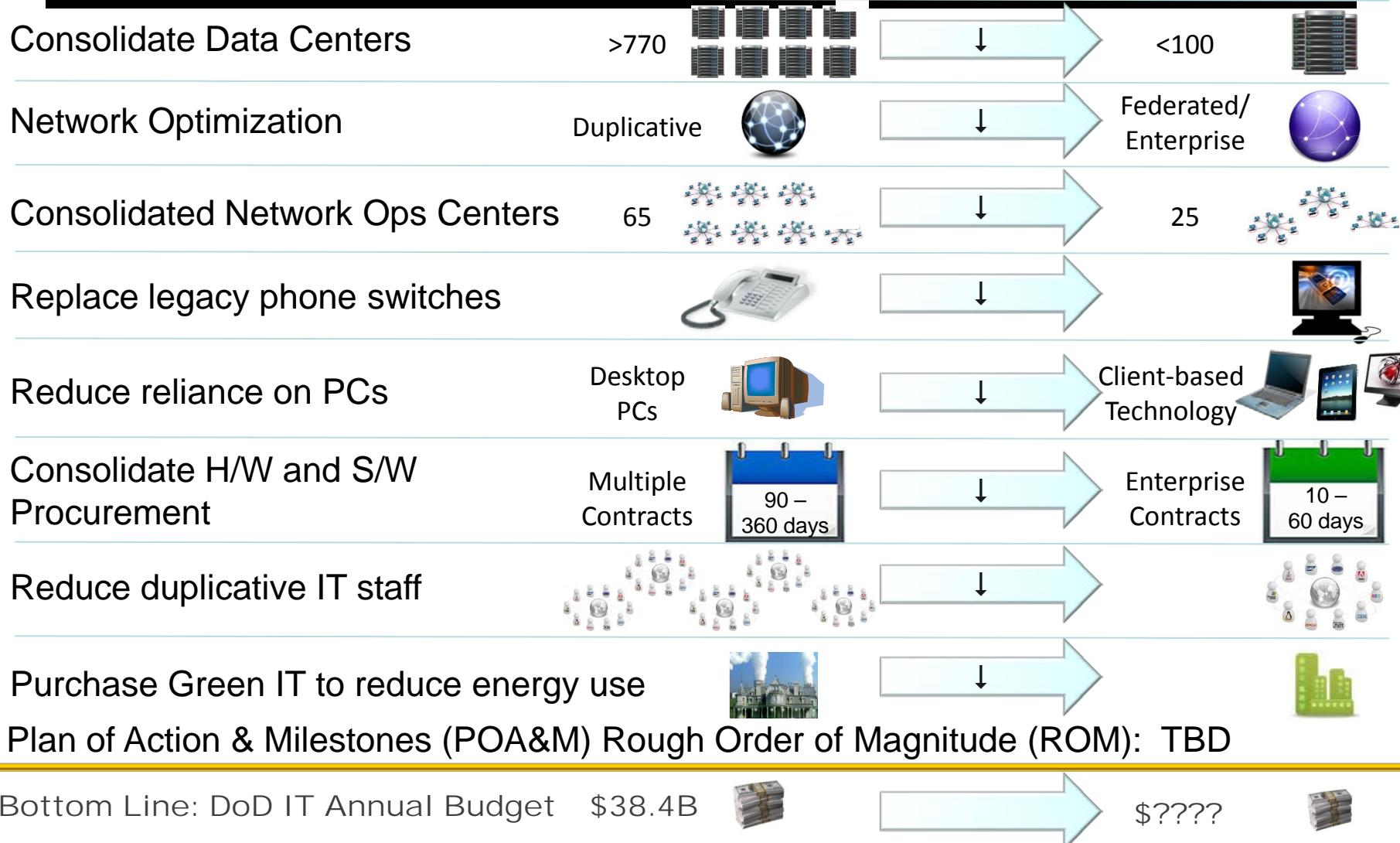




Improving DoD IT Effectiveness (Representative Initiatives)

FY12

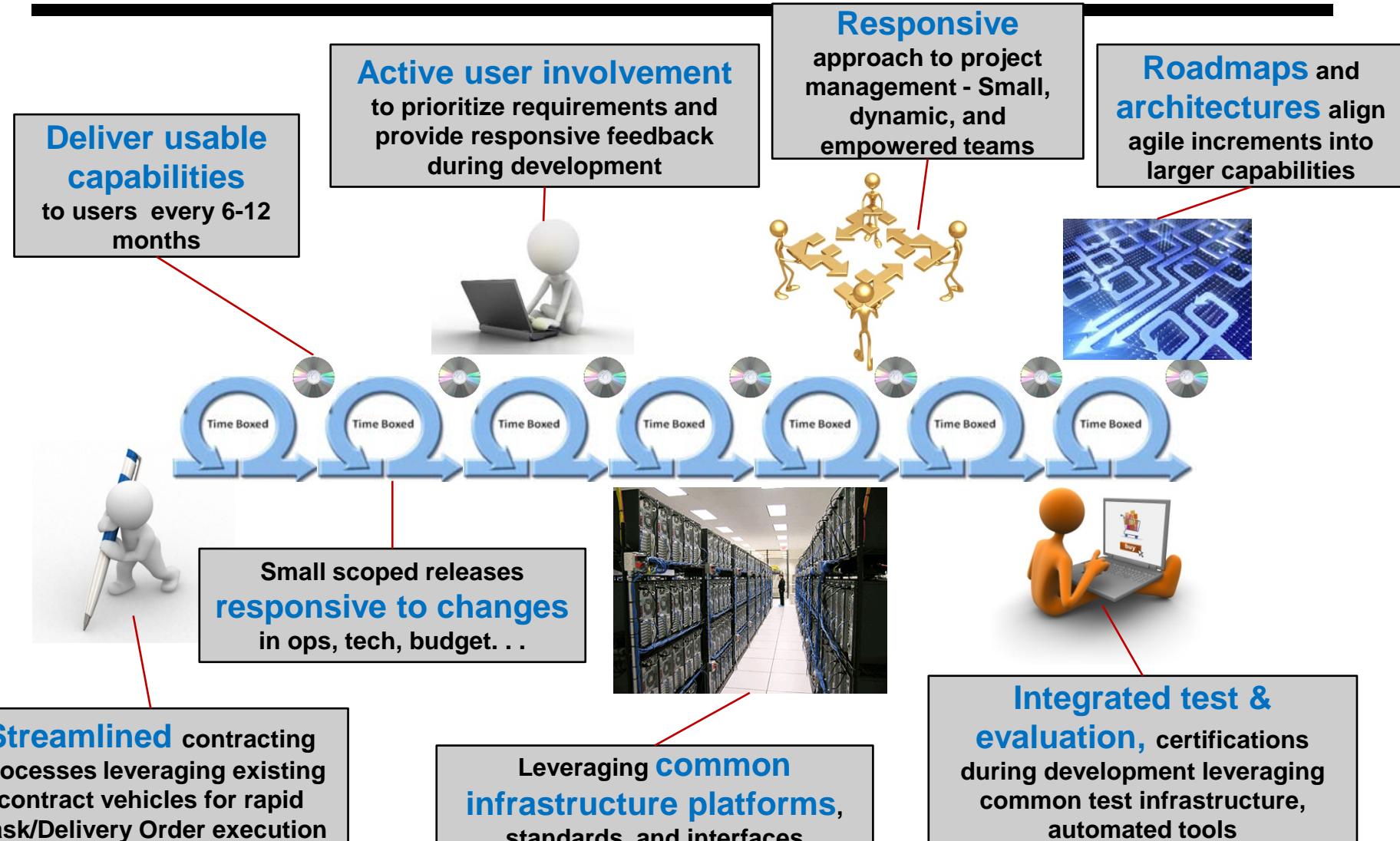
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Enable Agile Capability Delivery





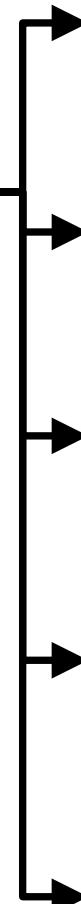
IT-Related Reforms in Progress



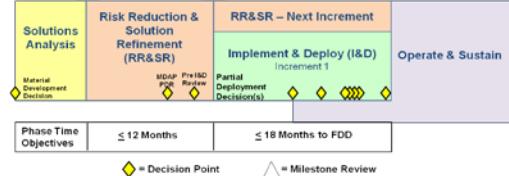
Section 804, 2010 NDAA

Guiding Principles

- Deliver Early and Often
- Incremental /Iterative development and testing
- Rationalized Requirements
- Flexible/Tailored Processes
- Knowledgeable/Experience IT Workforce



OSD/AT&L
New IT Acquisition Framework
for DODI 5000.02 Update



Joint Staff
New JCIDS Manual Streamlining
MAIS/IT Requirements



DOT&E/DDT&E
Streamlining and integrating
T&E for IT development



DoD CIO
IT Reform for Agile, Secure,
Efficient, and Effective DoD IT

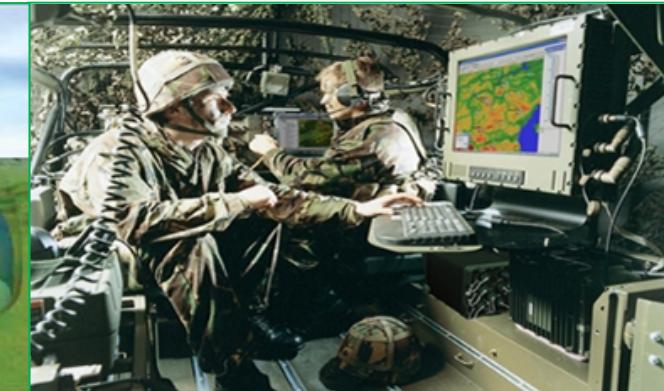


DCMO
Business Capability Lifecycle
(BCL)





Future DoD IT Environment (Anticipated Benefits)

		
<p>Reduced costs for data centers and applications</p>	<p>Improved interoperability for better coordination and collaboration</p>	<p>Improved user satisfaction and mission success</p>
		
<p>Faster, more responsive capability deliveries to Warfighters</p>	<p>Improved security to reduce cyber threats</p>	<p>Faster adoption of commercial IT breakthroughs</p>

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Food for Thought on Measuring C2 Effectiveness

**How much is a pound of C2 worth? How
much should it cost?"**

Command and Control (C2)

The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. C2 functions are performed through an arrangement of Personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission



What is C2 – and What Are You “Measuring?”



Command and Control System

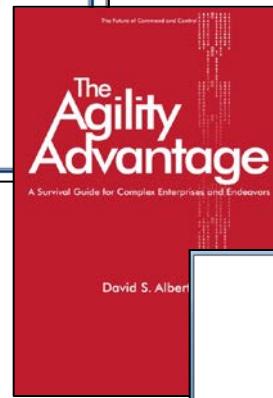
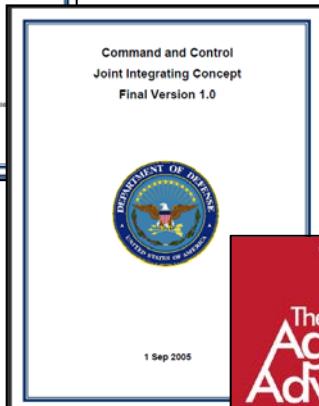
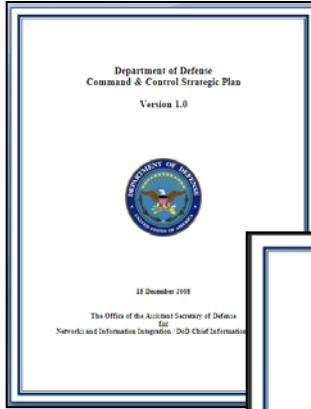
The facilities, equipment, communications, procedures, and personnel essential to a commander for planning, directing, and controlling operations of assigned and attached forces pursuant to the missions assigned

“The Department’s efforts in the C2 capability area will be guided by the principal maxim of C2: that technology enables the human interface and supports “command” and the decision-maker, rather than forcing the decision-maker to operate within the constraints of the “control” technology.”

--- DoD C2 Strategic Plan



Some Bounding Conditions Relevant to Command and Control...



DoD Level Strategy: DoD C2 Strategic Plan / Implementation Plan

- Strategic direction / policy guidance
- Overarching Capability Objectives / Key Actions
- Promote 'incremental improvements' responsive to Department priorities

Joint Concepts: C2 Joint Integrating Concept

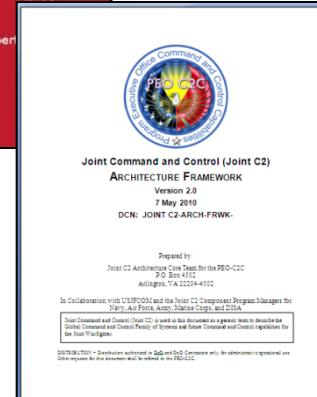
- Promote C2 capability development for **agile**, decisive, and integrated force employment ...
- Capabilities, tasks, attributes, performance standards

DoD CIO Sponsored C2 Research

- "Highly leveraged" / pro-active research community
- Pioneered numerous complex concepts: NCW/NEC, Maturity Models, Power to the Edge, **C2 Agility**, etc...

Reference Architectures:

- DoD IEA / Joint C2 OA
- Architectural concepts/reference
- Principles / constraints for C2 sustainment and modernization planning
- 'Authoritative' information and technical direction



Requirements

- JCIDS Documentation
- Key Performance Parameters
- Key System Attributes
- Operational Concepts

C2 Attributes

Agility, Accuracy, Relevance, Interoperability, Simplicity, Understanding, Timeliness, Accessibility, Robustness, and Operational trust

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Improving C2 Effectiveness

IT effectiveness vs Mission Outcomes

IT Effectiveness

- Data and Services Implementation
 - Visible, Accessible, Trustable, Understandable, Reusable...
 - From 'local' to 'enterprise'
- Info Sharing/Shared SA
 - Internal / external mission partners
 - Secure collaboration/coordination
- C2 Sustainment / Modernization
 - Responsive to user needs – within rationalized requirements/resources
- C2 Research
 - Leverage on-going research and experimentation

Mission Outcomes

- Data and services implementation
 - Quantifying the 'value proposition' in operational/mission benefit terms
 - Managing risk to current operations
- Info Sharing/Shared SA
 - Mission value of IdAM, CDS, CES
 - Security services!
- C2 Sustainment / Modernization
 - Optimize outcomes within resources and promote agile capability delivery
- C2 Research
 - Operationalize on-going research to improve DoD mission success



Closing Thoughts...

- **Challenge pre-existing assumptions**
 - Does the definition (or measurement) of C2 fundamentally change in the “Information Age?”
- **Think about what you are trying to measure – and add value in getting at the ‘right’ answers**
 - “How much is a pound of C2 worth? How much should it cost?” may not be the right questions...and may be unanswerable
- **Consider the implications of an “Agile” DoD – and how it impacts the ‘decision topology’ of Defense operations**



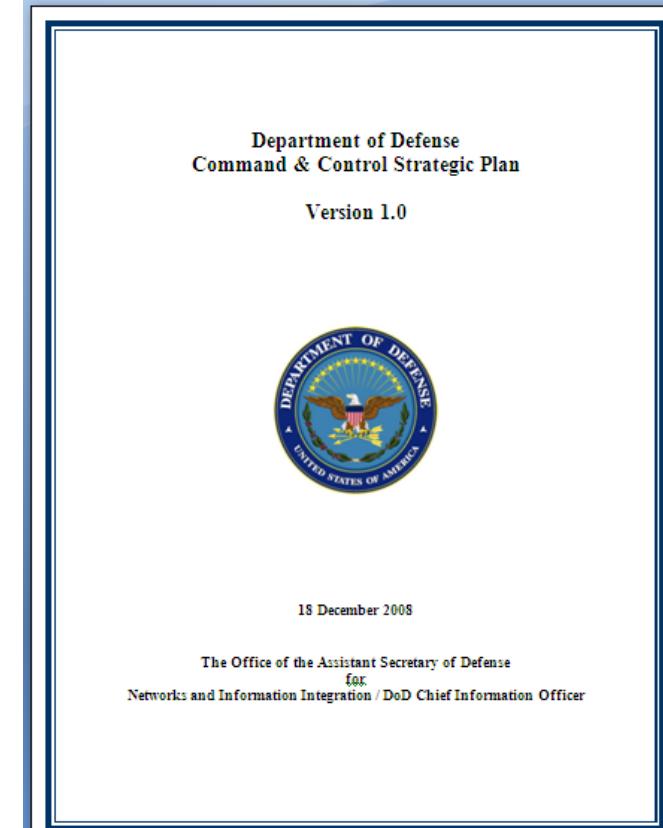
Questions

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DoD C2 Capability Objectives

- Provide the capabilities necessary to effectively support organizing command structures and forces, understand situations, plan and decide upon courses of action, and direct and monitor execution across the range of DoD operations
- Enable military forces and mission partners to conduct integrated operations across the range of DoD operations at all echelons of command
- Maximize assured sharing of information and services and synchronized implementation of collaborative C2 capabilities
- Optimize C2 capability investments across the range of DoD operations
- Achieve agile and responsive development, acquisition, fielding, and sustainment of C2 capabilities across the DOTMLPF spectrum

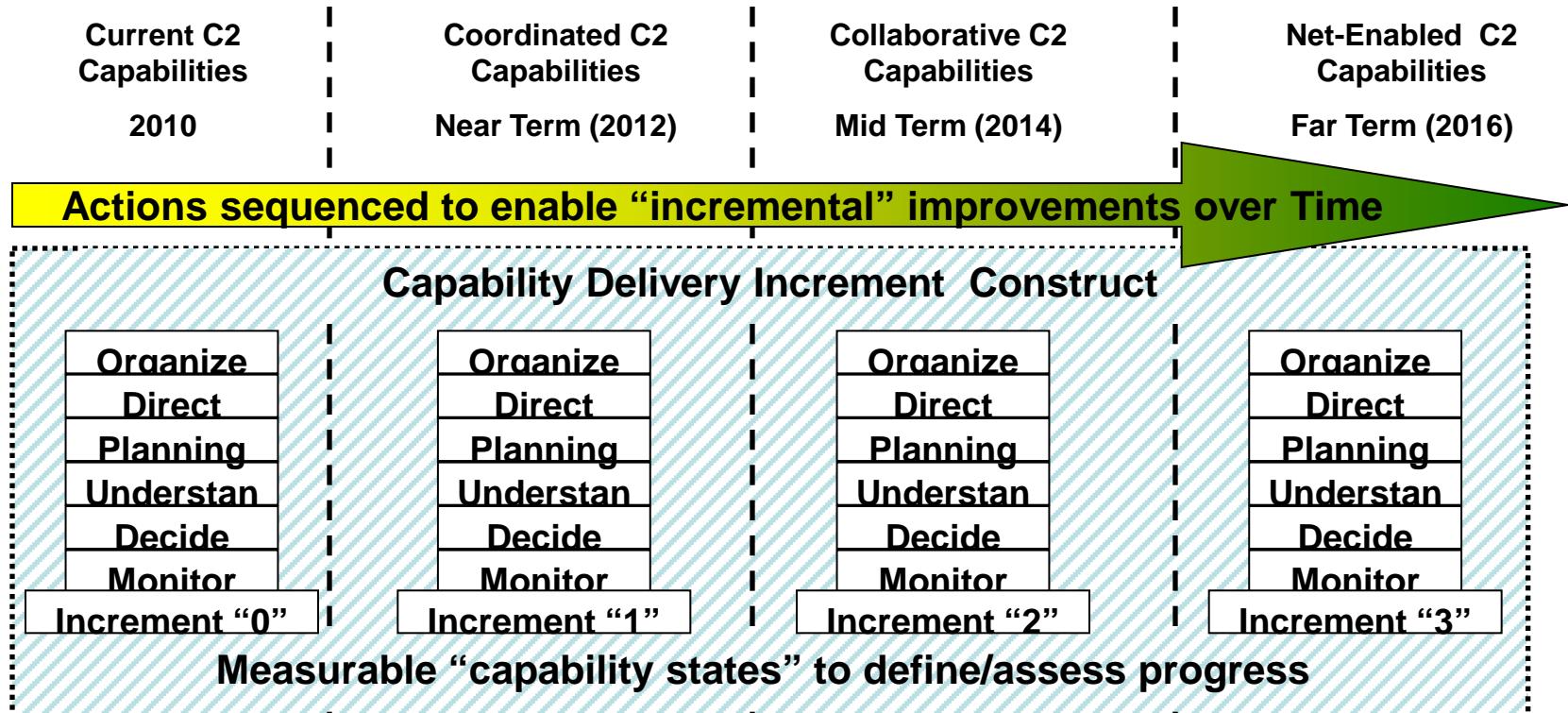


DoD C2 Strategic Plan approved January 12, 2009



DoD C2 Implementation Plan

An Approach to Implementation Planning and Execution



- Defined through baseline analysis
- Informed by C2 JCD, IPLs, etc

Recurring Improvements Enabled Through

- Data strategy/ services strategy implementation
- Balanced DOTMLPF analysis
- Effective governance and management
- Process improvements

- Framed by DoD C2 Strat Plan objectives and analyses
- Informed by Family of Joint Concepts

National Policy

NSPD-17/28, UCP 2006, HSPD-4/5/7, EO 12472, NSPD-10/14, NSPD-51/HSPD-20, NCD 3-10

DoD Policy

DoDD 0-5100.30, DoDD 5144.1, DoDD S-5100.44, DoDD S-5210.81, DoDD 3000.05, DoDD 3020.26, DODD 5105.79

National and DoD Strategy

NSS QDR NDS NMS GDF GEF

Other Guidance

DoD C2 Strategic Plan, DoD Net-Centric Data and Services Strategy, DoD C2 Implementation Plan

Senior C2 Governance Councils

- DMAG

C2 Functional Oversight Committees

- C2 CIB
- NLCC EMB
- JROC
- 3-Star Programmers
- DAB/ITAB

C2 Capability Management Forums

- C2 SWarF
- C2 CIB
- C2 ESC

DoD Decision Support Processes

- JCIDS
- PPBE
- DAS

NLCC Stakeholders

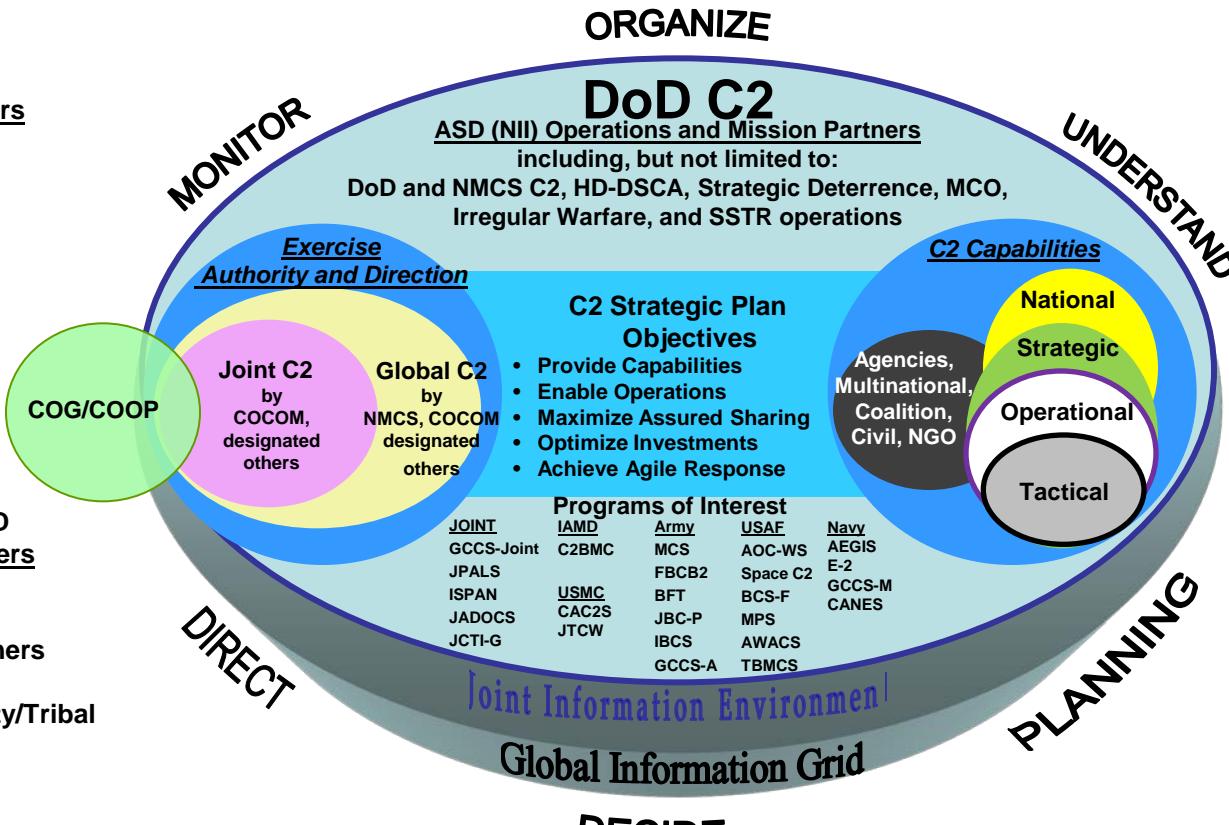
- POTUS/VPOTUS
- SECDEF
- SecState
- SecDHS
- DNI

DoD C2 Stakeholders

- OSD
- CJCS
- COCOMs
- Services
- Agencies
- JTFs
- CPMs

Non-DoD Stakeholders

- NGOs
- Allies
- Coalition Partners
- Interagency
- State/Local/City/Tribal



Command and control is defined as the ability to exercise authority and direction by a properly designated commander or decision-maker over assigned and attached forces and resources in the accomplishment of the mission. (C2 Strategic Plan)

Future Capabilities must be interoperable, timely, accessible, complete, secure, accurate, simple and relevant (C2 Strategic Plan)